

Code No: 6976

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021
FIRST SEMESTER
MICROBIOLOGY - CORE
PHYSIOLOGY AND METABOLISM

(for those who joined in July 2017 onwards)

Maximum: 75 marks

Time : Three hours

Part - A (10 X 1 = 10 marks)

Answer all question, choose the correct answer:

1. Peptidoglycan is made up of _____
 - a. N-acetylglucosamine
 - b. N-acetylmuramic acid
 - c. N-acetylglucosamine, N-acetylmuramic acid
 - d. N-acetylglucosamine, N-acetylmuramic acid, amino acids

2. Teichoic acid present in Gram-positive bacteria can bind to which ion?
 - a. Fe ions
 - b. Phosphorus ions
 - c. Mg ions
 - d. Sulphur ions

3. Active transport of a substance across a membrane requires:
 - a. a gradient
 - b. the expenditure of ATP
 - c. water
 - d. diffusion

4. Which of the following is not a product of fermentation?
 - a. Lactate
 - b. Oxygen
 - c. Carbon dioxide
 - d. Ethanol

5. The final electron acceptor in lactic acid fermentation is
 - a. Oxygen
 - b. Lactic acid
 - c. Pyruvate
 - d. NAD

6. Which types of fermentation used to Produced buttermilk, Yohurt and ^Sour cream
 - a. Propionic acid
 - b. Fumaric acid
 - c. lactic acid
 - d. alcohol

7. _____ is the process in which organic matter is decomposed to release simple inorganic compounds
 - a. Ammonification
 - b. Nitrogen fixation
 - c. Mineralization
 - d. Nitrification

8. The two pigment system theory of photosynthesis was proposed by

- a. Aron
- b. Blackman
- c. Hill
- d. Emerson

9. The spore is covered by a thin delicate outer covering called

- a. Exosporium
- b. Spore coat
- c. Core
- d. none

10. During the phase, the rate of new cells added to the ____ population has slowed down.

- a. stationary
- b. death
- c. lag
- d. exponential growth

PART- B - (5x5=25 marks)

**Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.**

11.a What is S layer in cell wall?

Or

b. What are the characteristics of outer membrane?

12.a Describe the various product of fermentation from pyruvic acid with the organism involved.

Or

b. What type of transport proteins are involved in active transport?

13. a Describe the typical structure and function of butyric acid with neat diagram.

Ok

b. Write a brief account on Pasteur effects

14. a Write a short on nif gene and role of nif in N_2 fixation.

Or

b. Discuss the photosynthetic process in cyanobacteria

15. a How to calculate microbial growth?

Or

b Explain in detail about the stages of sporulation with neat sketches.

PART- C - (5x8=40 marks)

**Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.**

16.a. What is the structure and function of flagella?

Or

b. Briefly explain the structure of cytoplasmic membrane.

17.a Summarise the distinctive characters and types of transport mechanism.

Or

b. What is the metabolic pathway through which glucose is formed from non carbohydrate sources?

18. a What is bioluminescence and what is its purpose?.

Or

b. Illustrate the three stages of lactic acid .Give its organization of substrate and products.

19.a What is the role of photosynthetic pigments?

Or

b. What are the accessory pigments and what are their functions?.

20.a What do you mean by synchronous culture?

Or

b. With the help of a diagrammatic sketch explain the structure of a bacterial spore.